



Tokenise

How **NFTs and tokenisation** will disrupt tomorrow's economies.

Seed

Strategy | Regulatory | Tax | Advisory

First published by Seed in 2022.

Seedconsultancy.com

info@seedconsultancy.com

Designed by Matthew Camilleri

All rights reserved. No part of this publication may be reproduced without the previous written permission.

Copyright Publication © Seed.

ISBN: 978-9918-9531-4-1

The Authors



JP Fabri

Co-founding Partner

Co-founding partner of Seed and economist by profession. JP advises a host of local and international clients on economic advisory and financial services regulation. He is an applied economist and has advised clients spanning several sectors including governments and regulators. He formed part of the private cabinet of former Prime Minister of Malta and Governor of the Central Bank of Malta. As part of the Prime Minister's team; JP led key core groups that established the gaming sector in Malta, the life-sciences cluster and supported Malta's response to the 2008 economic crisis. Appointed as a Resilience and Fintech expert by the Commonwealth Secretariat, he also has international policy advisory experience after having advised 9 governments on economic resilience and good governance. He piloted and drafted various economic reforms and strategies. A regular commentator on local media, he has participated in several international conferences. He is a visiting assistant lecturer at the University of Malta, serves as Director of Development at the Blockchain and Climate Institute and active in the Malta Chamber of Commerce and Industry. He is also a member on ISO TC/307; ISOs global committee on developing standards for blockchain and finance. He has also published various studies and academic papers on



Karl Wismayer

Analyst

Analyst at Seed focusing on Strategic Consultancy, Economic Research & Data Analytics and Financial Regulation. Following his postgraduate master's degree in finance, Karl began his career in financial services, primarily focusing on the provision of advisory services in relation to fintech, namely blockchain and cryptocurrencies. However, Karl's keen interest in quantitative and qualitative research also led to his involvement in various projects namely the formulation of business plans and IP valuations, consulting on strategy transformation maps, advising on tokenomics and DAO formation, as well as contributing to writing public policy documents and national economic frameworks.

Contributors to the publication



Dr Joshua Ellul

Director, Centre for Distributed Ledger Technologies

Dr Joshua Ellul is director of the Centre for Distributed Ledger Technologies (DLT) and a senior lecturer in the Computer Science Department at the University of Malta. He is also Chairperson of the Malta Digital Innovation Authority which regulates technology aspects of blockchain and safety-critical systems such including those that may make use of Artificial Intelligence. The Centre for DLT developed and runs a world-first multidisciplinary Masters in Blockchain and DLT which takes in students having backgrounds in computer science, law, finance and economics. The Malta Digital Innovation Authority is the World's first technology regulator that has put into place a technology assurance regulatory framework for Blockchain, DLT and Smart Contracts. His areas of research focus around the Internet of Things (IoT) and blockchain domains including: enabling ease of software development; detecting illegal activity; technology regulation; and techniques for reducing mistakes in smart contracts.



Dr Sandro Debono

*Consultant, Culture, Office of the Prime Minister of the Republic (Malta),
Associate Lecturer at University of Malta*

Dr Sandro Debono is a museum thinker, keynote speaker, consultant and art historian with a background in contemporary museology and museum studies. He is the brains behind the MUZA concept, originally developed as a wireframe guiding the rethinking of Malta's National Museum of Fine Arts and lately honoured by the French government for his contribution to the arts and culture.

He is the national representative at the European Museum Academy and founding member of We Are Museums Lab, an international platform of museum change makers and innovators based in Paris. He has recently also joined the international advisory board of the Anchorage Museum (Alaska U.S.A.).

Sandro has also lectured in museology, museum futures and art-related



Prof Stelios Bekiros (PhD, MEng, MSc, Dipl.-Ing, BEng)

Chair Full Professor of FinAI, Econometrics & Data Science, FEMA, University of Malta ; Research Full Professor IPAG Business School (Paris, France) ; Senior Fellow & Visiting Professor London School of Economics (LSE, London, UK), LSE Health Centre & Dept. of Health Policy

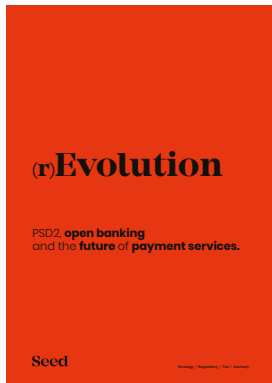
Professor Dr. Stelios Bekiros (PhD, MEng, MSc, Dipl.-Ing, BEng) holds the Chair of FinAI, Econometrics and Data Science in the Faculty of Economics and Management (FEMA) at the University of Malta, DLT Centre and Department of Banking and Finance (www.steliosbekiros.com). He is Research Full Professor at the IPAG Business School (Paris), at the University of Turin and at the European University Institute (EUI, Florence), Senior Fellow of the LSE Health Centre and Visiting Professor of Health Economics, Bioinformatics, Computational Medicine and Epigenomics at the Department of Health Policy at the London School of Economics (LSE, UK), Senior Fellow at the Rimini Centre for Economic Analysis (Canada) and Senior Fellow of LABEX ReFi/Financial Regulation Lab. In the past, he held academic positions in distinguished universities, research centres and institutions in the Netherlands, Italy, France, UK and Greece. Professor Bekiros has also worked as an expert consultant in the public and private sector, as an advisor in Ministries of Finance, Economic Development, Economic Affairs and Digital Governance, and Education in many countries, and at the European Commission. He acts as expert evaluator for NSERC, NSF, EU-REA, SNF, WES-Ifo Institute, La Caixa Institute, Bank of Finland, CEPR, Oxford University, ParisRegionFP Recherche et Culture Scientifique and GSRT. During the last twenty years he served as principal investigator, leading coordinator and project manager in many EU and national research projects and has been awarded numerous grants and fellowships. IDEAS, Web of Science, Scopus and Google Scholar, rank Professor Bekiros among the top 5% authors worldwide. He serves as Editor, Co-Editor and Assc. Editor for 20 prestigious Journals of all major publishers i.e., Elsevier, INFORMS, Springer-Nature, Wiley, Taylor & Francis, IEEE, Mdpi etc., among other. His multidisciplinary work, with presently over 300 articles, has been published in the most highly esteemed academic journals, collective volumes and in books and proceedings in many scientific fields. His current research interests include among other Quantum Machine Learning and Artificial Intelligence, Blockchain Technology, Econophysics, FinTech, Big Data Science, DeFi, Bioinformatics, Computational Econometrics, Health Policy, Extreme and Bayesian Statistics, Complex Systems, Epigenomics, Computational Medicine, Financial Engineering, Macroeconomic Monetary Policy, Behavioral Finance, Economic Development etc. Professor Bekiros holds a BEng, a Dipl.-Ing and an MEng in Electrical and Computer Engineering (spec. Artificial Intelligence, Control Systems, Software Engineering) from National Technical University of Athens (NTUA), an MSc in Decision Sciences (spec. Statistics, Financial Engineering, Operations Research and Information Technology) and a PhD in Big Data Econometrics and Computational Finance (spec. ML/AI) from Athens University of Economics and Business (AUEB).

Other publications by Seed



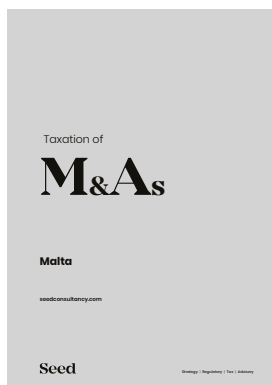
Agile. *Perspectives on the future of Malta's economy post COVID-19. (April, 2020)*

This publication aims to contribute to the national debate and to stimulate business and policy leaders to embrace the future and to start working towards a much-needed recovery plan that is anchored around a long-run vision for Malta. The research report complemented by consultations with 18 social partners, 20 business leaders, 15 expert contributions and an economic survey with 385 participants.



(r)Evolution. *PSD2, Open Banking and the future of payment services.*

This report sheds light on the adoption by local credit and financial institutions of Europe's Second Payment Services Directive (PSD2) which introduces the concept of Open Banking within its regulatory framework. To gauge the Directive's impact and measure the level of preparedness in the financial world, we undertook a qualitative and quantitative research study of representatives from close to 20 leading credit and financial institutions. We have used the results to inform this report.



This is the first publication in the series 'Taxation of..'

This series aims to shed light on tax matters in various transactions and industries. This particular publication provides a detailed explanation of the tax matters in M&A transactions – it looks at the tax treatment from both the buy-side and the sell-side, on both asset and share deals. The last section of the report also delves into the issues of Change Management within a M&A, which are often overlooked and are so critical to the success of the M&A itself.

seedconsultancy.com



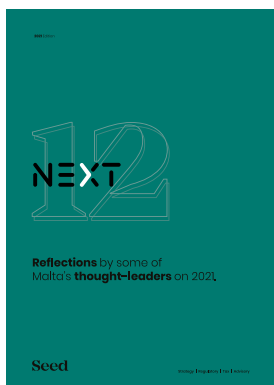
Propose. Budget 2021. (September, 2020)

Seed launches its pre-budget recommendations with a two-pronged approach. The first set of recommendations focuses on a short-term stimulus package to continue supporting real economic activity with the main measure being the gradual reduction in corporate tax for local businesses. Second set of proposals are anchored around a long-term vision for the island.



Malta Budget 2021. (October, 2020)

This document presents a detailed review of the Malta Budget for 2021. Apart from a high-level description of the measures announced by the Government, the report also gives a detailed economic context and analysis which should serve as a backdrop to this unique budget.



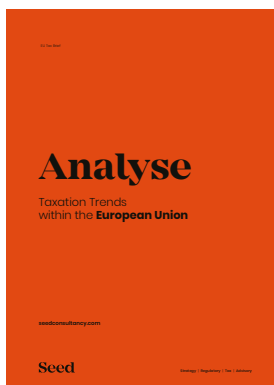
Next12. *Reflections by some of Malta's thought-leaders on 2021.* (January, 2021)

Next12 brings together some of Malta's leading thought-leaders in their respective field to share their insights on a number of areas and topics and their developments throughout 2021. With still a prevailing sense of uncertainty, the world will surely continue to transform itself in a number of domains. There is no doubt that the world will change. Business and trade will change. Social dynamics and our way of life will change too. We need to start thinking of a new normal and Malta is no exception.

seedconsultancy.com

Seed

Strategy | Regulatory | Tax | Advisory



Analyse. *Taxation Trends within the European Union. (February, 2021)*

This publication provides high level tax information on each of the 27 EU Member States. As the world becomes smaller it is becoming more important to be able to obtain an understanding of how transactions are impacted in different countries and not just in Malta. This publication provides essential information on the various tax systems within the EU at the click of a button.



Vaccine. *Building the case for vaccine manufacturing in Africa. (June, 2021)*

The burden of infectious diseases continues to be disproportionately high in some African countries, particularly in sub-Saharan Africa, leading to significant impacts on health and socio-economic development. The COVID-19 pandemic has revived a long-standing question in African and global circles: What would it take for Africa to manufacture its own vaccines? This report is our contribution to the debate.

seedconsultancy.com

Seed

Strategy | Regulatory | Tax | Advisory

Foreword

The interplay between real and virtual economies keeps increasing and the integration of various technologies, especially blockchain, is blurring the lines even more and bringing new forms of economic activity.

Non-fungible tokens, known as NFTs, are such a new development that has the power to disrupt several traditional industries by bringing the physical world closer to the virtual economy. The concept behind NFTs is to create a certain scarcity and shortage in the flood of the seemingly infinite supply of virtual items.

The benefits of non-fungible tokens can lead to the development and growth of an entirely new creator economy. The creator economy will focus on helping content creators avoid the need to transfer ownership of the platforms they use to publish their content. NFTs are also likely to shape sports, entertainment, and other communities going forward. NFTs represent a deeper and more innovative way for fans to engage and potential new revenue streams for organizations.

Subject to limitations in any relevant jurisdiction, NFTs have the potential to facilitate new revenue streams by establishing new forms of digital property, act as new channels for businesses and digital creators to reach customers, fans, and audiences and/or enable the monetisation of physical assets.

As NFTs can be applied to so many different types of digital assets, the question today is how will NFTs transform the nature of assets, and the nature of ownership and management of assets – not limited to digital assets but encompassing traditional physical assets and documents as well.

Regardless of whether the recent hyper-growth of NFTs is sustainable in the short-term or not, legitimate use cases are starting to emerge. The future of NFTs

will also rely on the imminent regulatory response and especially how the wider industry will accommodate for new regulations, especially relating to backed NFTs and proof of ownership and ID. Yet, artists, consumers, collectors, and investors are already benefiting from the new opportunities that NFTs enable in the areas of digital art, music, movies, collectibles, DeFi, and even real-world assets.

Apart from the technology and regulatory landscape, NFTs is very much a virtual economy construct. Seed has been active in tokenomics, assisting several token projects and DAOs on their economic modelling. As a research-driven advisory firm with a strong applied economics team, Seed uses macroeconomic design and modelling with microeconomic foundations to develop token systems that deliver value to all stakeholders.

This publication is the first in a series of reports that throws the spotlight on the broader context of virtual economics. As the virtual economy grows in both size and scope, we believe that understanding the economic fundamentals is necessary for corporates to truly navigate the new landscape. The virtual economy is actually more about economics than one would think.

Designing the right ecosystem, token structure, incentive mechanism and ensuring the circulation of tokens in the ecosystem are critical elements that determine the success or otherwise of token projects and games.

We look forward to further developments in the area which are set to continue disrupting traditional sectors and will narrow the gap further between the physical and digital reality and economy.

JP Fabri & Nicky Gouder
Co-founding partners



Table of contents

1	What are NFTs?	12
2	Why all the hype? – The Value behind non-fungibility	14
3	Who are the market players? – NFT Ecosystem	16
4	How do NFTs Work – The Mechanics	20
5	Minting and Purchasing an NFT	22
6	NFTS beyond Digital Art – Use-Cases of NFTs	24
7	Challenges for NFTs	28
8	The Future through NFTs	32
9	Insights from Industry Experts	36
10	Conclusion	49
	About Seed	50
	How can we help	52



What are NFTs?

What are NFTs?

By definition, Non-Fungible Tokens (NFTs) are digital tokens, recorded on a blockchain or other form of distributed ledger technology, which are inherently unique and non-fungible in nature.

However, to truly comprehend NFTs, one must first come to grips with the difference between fungibility and non-fungibility.

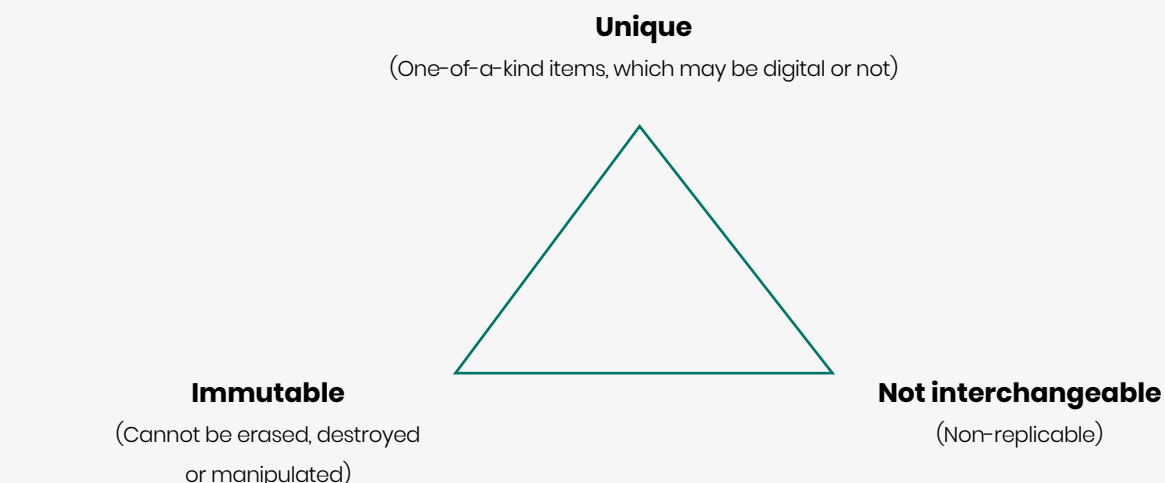
When an asset is fungible, this means that it is completely replaceable by another identical asset, thus having no distinction in value between the two assets. Fiat currencies such as Euro or Pounds or shares in a company are deemed to be fungible assets because each unit of currency or share can be easily exchanged with another identical unit or share, without any difference in value. For example, a 5 euro note is exchangeable for any other 5 euro note. Similarly,

cryptocurrencies like Bitcoin or Ethereum, are examples of blockchain-based tokens which are also fungible.

Non-fungibility, on the other hand, is a term used to describe assets in which there is only one of these assets in existence, thus eliminating the possibility that it can be replaced by an identical item. In the real world, there are many examples of unique items such as specific art pieces or musical pieces for instance.

Therefore, as the name suggests, NFTs are tokens on the blockchain, similar to their fungible token counterparts, but which differ due to the fact that there is only one in existence.

Besides this fundamental distinction, they also constitute the following properties highlighted below:





Why all the hype?

The Value behind non-fungibility

Why all the hype?

The Value behind non-fungibility

By combining non-fungibility and blockchain technology, NFTs have opened up the possibility to have an easily verifiable, publicly available and tamperless digital proof of title for an asset. So far, society is accustomed to the value attributed to unique physical assets such as rare art pieces or real estate. However, this concept is hard to understand in the digital world, where images or videos found online can be infinitely created and replicated.

As a result, for the first time in history, NFTs can play a pivotal role as a means to create scarcity and uniqueness for digital content, through the tokenisation of the proof of title to that content. In other words, this means that whilst there may still be an infinite supply of digital copies or replicas for a particular piece of content online, there now exists the possibility of having a “digital original” which is represented through the NFT and which may denote

ownership that is publicly verifiable, immutable and can be clearly attributed to a specific user or digital wallet.

The implications of this have been the main impetus driving the NFT hype, in particular within the digital art space which is where NFTs first became a mainstream phenomenon, during the crypto market bull run of 2017, with the creation of the “CryptoKitties” collectibles. In the not-so-distant future, NFTs can prove to revolutionise the art space, providing effective solutions to key barriers within the industry, such as copyright and plagiarism implications as well as financing of artists amongst others.

Moreover, the adoption for NFTs can go far beyond that of just digital art and can be easily exploitable across a multitude of different sectors and activities as shall be seen further on.

“NFTs are digital birth certificates”

– Dane Scarborough

Who are the market players?

NFT Ecosystem

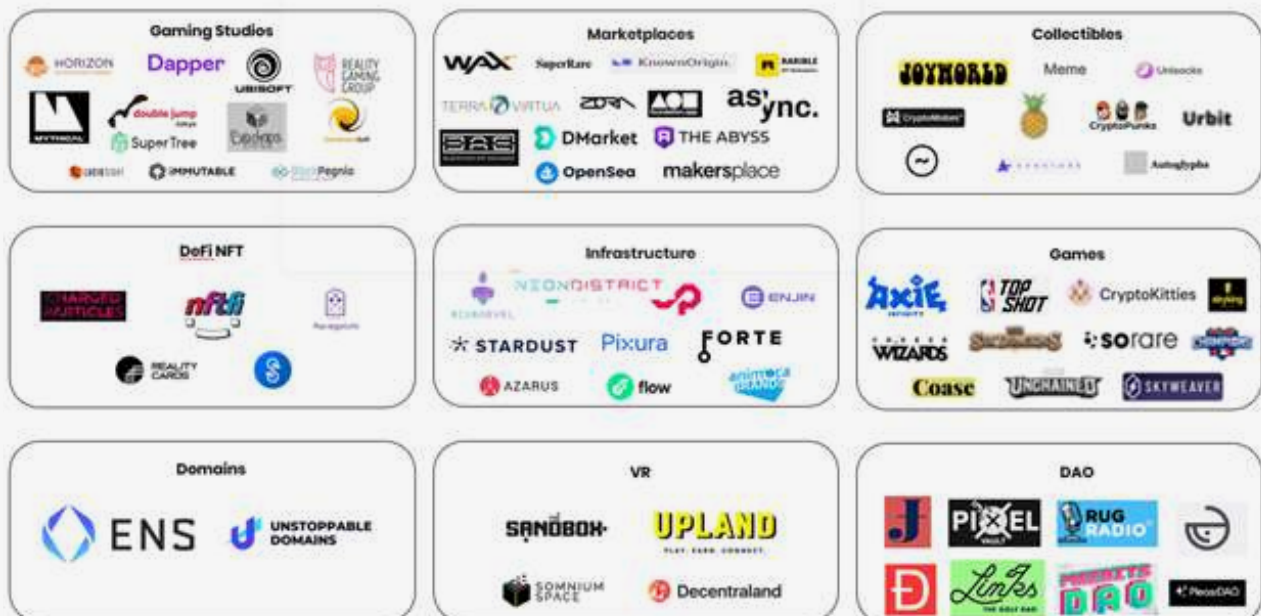
Who are the market players?

NFT Ecosystem

Albeit the industry still being in its nascent years, the NFT ecosystem is significantly and rapidly growing, with developments and improvements spanning across all layers of the value chain, from the infrastructure level all the way to the end-user level.

To better understand the NFT ecosystem, the diagram and descriptions below depict the several key groups within the space, all contributing to the development and adoption of NFTs.

THE NON-FUNGIBLE TOKEN (NFT) ECOSYSTEM



Source: The Block

A. MARKETPLACES

NFT marketplaces, are platforms whereby NFTs are exchanged or traded, making up an integral part of the ecosystem.

C. INFRASTRUCTURE

The foundational elements of NFTs are rooted in the creation of an infrastructure centred around 3 fundamentals, namely, security, decentralisation and scalability.

E. VIRTUAL REALITIES (METAVERSE)

Whilst all seems very futuristic, online virtual worlds, or more commonly known as the 'Metaverse', coupled with technologies such as artificial intelligence (AI) and virtual reality (VR) can utilise NFTs to represent all in-world items within this digital economy, having its users, represented possibly through the use of avatars share in its ownership.

G. DOMAINS

Domain names can easily be tokenised and sold as NFTs, granting possible ownership rights to its holders.

B. COLLECTIBLES

Any form of physical or digital asset can be tokenised and become a digital collectible due to the digital scarcity value that NFTs provide.

D. GAMES AND GAMING STUDIOS

Various gaming studios have created the infrastructure for NFT based games, providing digital ownership of in-game items to players and manifesting concepts such as "Play-to-Earn" to increase and incentivise engagement and usage.

F. NFT AND DECENTRALISED FINANCE (DeFi)

With decentralised finance also gaining significant traction in the crypto sphere, NFTs can play a role in its growth. The provision of loans and other forms of credit is a fundamental facet within any financial system. As a form of storage of value, NFTs can also be utilised as a form of collateral for loans offered through DeFi.

H. DAOs

DAOs (decentralised autonomous organisations), are organisations that are owned by its members and governed by rules embedded within smart contracts. These can also own, create and trade NFTs.

A person wearing a white shirt is holding a black smartphone. The background is blurred, showing what appears to be a laptop and some papers. The overall tone is professional and tech-oriented.

How do NFTs Work

The Mechanics

How do NFTs Work

The Mechanics

The technical composition of NFT revolves around **3 important components**. These include:

DISTRIBUTED LEDGER TECHNOLOGY (DLT)

Distributed ledger technology, is essential for the creation of NFTs along with the characteristics that define them as described in previous sections. Whilst there are many types of DLT in existence, blockchain technology is the most commonly used. The latter comprises of a chain of blocks, filled with records, which are locked using cryptography and together form a decentralised, verifiable and tamper-proof ledger, which may be public as is the case with most popular blockchains such as Bitcoin or Ethereum.

Currently, the Ethereum blockchain is also where most NFTs are traded, mainly due to the vast popularity of the protocol and the exponentially growing infrastructure it has built over the years.

However, other platforms which offer cheaper execution of code are gaining in popularity, including other blockchains such as Solana and Avalanche, as well as layer 2 solutions, such as Polygon, Optimism and Arbitrum amongst others.

SMART CONTRACTS

The second integral component to NFTs are smart contracts. When minting an NFT, the token is embedded within the smart contract, providing undisputable ownership and authenticity on a publicly verifiable distributed ledger.

Moreover, the smart contract contains information regarding the NFT, including the creator of the work, other parties' entitled to royalties each time the NFT is sold, and the ownership history of the work.

TOKENS

Inevitably, in order to tokenise a digital or physical asset on the blockchain, this is done through the creation of a token through a process called "minting". These tokens are typically built in accordance to one of several token standards utilised across a particular blockchain.

These token standards dictate the characteristics of the token, including whether it is fungible or not as well as its functionality. So far, the industry has become familiar with the ERC-721 and ERC-1155 standards, which allow for the creation of non-fungible tokens on the Ethereum blockchain. Other blockchains are also introducing their own token standards, albeit often similar to the ERC-standards.

Examples include the BEP-721 and BEP 1155 on the Binance Smart Chain and the Tezos TZIP-12.

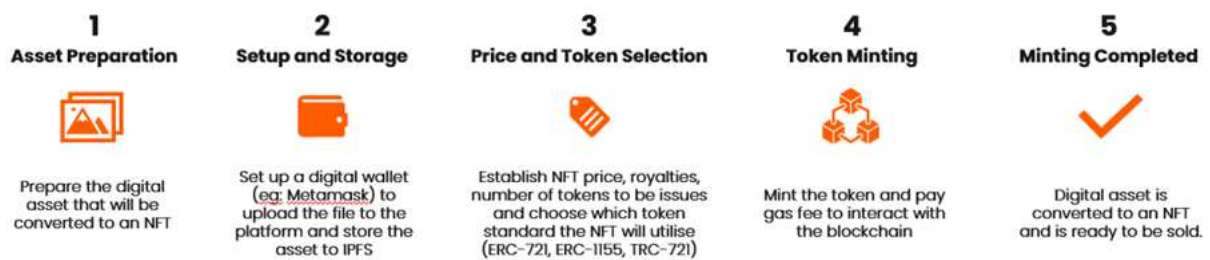
A close-up photograph of a hand holding a US dollar bill, with the bill partially covering a laptop keyboard. The text 'Minting and Purchasing an NFT' is overlaid on the left side of the image.

Minting and Purchasing an NFT

Minting and Purchasing an NFT

The creation and trade of an NFT involves several common steps, irrespective of the platform where it is issued or underlying blockchain protocol. Below includes a graphic representation of such processes.

NFT MINTING



NFT PURCHASING



Source: NTT Data



NFTS beyond Digital Art

Use-Cases of NFTs

NFTs beyond Digital Art

Use-Cases of NFTs

The popularity of NFTs has been largely attributed to the craze surrounding the digital art and collectible spheres leading many to believe that these are the sole use-cases for these tokens. However, as time progresses, NFT use-cases are increasing rapidly,

on the back of increasing adoption globally and a vastly improving technological infrastructure and ecosystem. The following delves into several of the current and emerging use-cases for NFTs.

A. CREATIVE INDUSTRIES SUCH AS ART, MUSIC AND FILM

The use of NFTs in art has many advantages, not just with regards to verifiable ownership of digital art, but also in terms of democratising and disintermediating the purchasing and financing process for artists, especially those which are not yet established household names. With blockchain being a peer-to-peer network, NFTs provide a way for the artist to directly tap into its fanbase and offer the art without the use of intermediaries. In essence, artists can build entire economies or ecosystems around their fans directly, offering them not just the art represented through a token but also embedding within the token other forms of utility which are deemed valuable by the community and enhance engagement, such as exclusivity rights for art displays or access to the artist itself for instance.

This concept could also be appealing to non-digital art, whereby works of art are tokenised, widening the artists accessible market beyond its borders to anyone who has an internet connection. As a result, financing opportunities for an artist's work is also facilitated, with artists being able to monetise the authentic transfer of ownership of their pieces to others.

For other sectors within the creative industries, such as music and film, NFTs provide musicians and film makers with the opportunity to directly monetise the copyrights of their material through royalties as well as use them as mechanisms to engage their fanbase with exclusive items, rewards or experiences for their token holders as previously described.

B. TICKETS & EXCLUSIVE COMMUNITY CLUBS

The ticketing world is poised to see significant adoption of NFTs in the future, with the capability of minimising the very real issue of ticket fraud or fake tickets and facilitate event organisers and promoters by lowering distribution and other upfront costs of event tickets.

Museums are a perfect use-case for such a scenario, whereby tickets can be tokenised and sold to customers digitally. Through the use of the blockchain, museums have a reliable way to verify the exact amount, price and transaction properties of all their tickets, including to whom the ticket is sold.

This can prove to be highly beneficial in preventing occurrences of fake ticket use and scams, as well as minimising fraud through the ability to monitor and verify any exchanges made for a ticket on the secondary market, thus ensuring a greater level of trust and transparency with customers.

Moreover, NFTs can create community clubs with NFT holders benefitting from exclusive access to an event, person or experience. Such a use-case could lead to ownership of certain NFTs being construed as status symbols and deriving intangible value from that.

C. SPORTS

Similar to the use-case just outlined, counterfeit tickets and fake merchandise in sports are also common occurrences. Whilst the benefits of NFTs for tickets also applies to sports events, athletes are also viewing the possibility of issuing NFTs to represent

themselves, with its value tied to the success or failure of their sporting endeavours. The tokenisation of athletes gives another avenue to monetise their successes, whilst sharing their success with their token holders.

D. GAMING AND ESPORTS

With the value of items and assets in video games about to reach an approximate total market value of \$200 billion by the end of 2021, NFTs are unlocking new avenues for players to monetise off this incredibly

vast market, through new games created on the blockchain. Players can now personally own their in-game assets and generate profits by selling them on secondary NFT markets.

E. REAL ESTATE

With transfer of ownership of real estate being predominantly a lengthy and paper-driven process, across many countries globally, NFTs can provide a solution to ease transfer of ownership, through the

tokenisation of real estate as NFTs. As was mentioned with art, NFTs also facilitate the financing of real estate, with these largely increasing the liquidity capabilities of this asset class to a borderless market.

F. LICENSES AND CERTIFICATION

NFTs can be used to provide an easier approach for the verification of any type of license or certificate. Seen as a revolutionary concept in edutech, educational certificates may be issued through the blockchain, using NFTs, tailored to a specific

individual's credentials, which in turn may be easily accessed and trusted by any other 3rd party institution needing this information, without the added resources needed to search for records and verify their authenticity.

G. CONSUMER GOODS

Supply chains of all industries such as fashion, food items or pharmaceuticals can benefit from tokenisation and utilise NFTs for easier tracking

capabilities of individual items and mitigate instances of fraud.

H. KNOW-YOUR-CUSTOMER AND REGULATORY COMPLIANCE

Through NFTs, sensitive information such as a person's ID, passport, driving license, health records and even financial records could all be tokenised into NFTs, completely stored in a secure and easily verifiable way for any 3rd party institution to access

upon the user's discretion. Given the rigorous and costly compliance requirements that sectors such as financial services have, NFTs can provide an opportunity to reduce compliance costs pertaining to customer due diligence and KYC procedures.

A close-up photograph of a hand moving a wooden chess king piece. The hand is positioned on the right side of the frame, with fingers gently gripping the top of the piece. The piece is a classic king, with a tiered base and a crown-like top. The background is a soft, out-of-focus blue-grey. The lighting is dramatic, highlighting the texture of the wood and the skin of the hand. The overall mood is one of strategic movement and decision-making.

Challenges for NFTs

Challenges for NFTs

Whilst the possibilities of using NFTs are endless and span across a multitude of sectors, it is important to see beyond the hype and understand that NFTs are faced with various challenges that need to be overcome in

order to achieve widespread global adoption.

For ease of reference, these challenges have been categorised under technical and legal as follows:

TECHNICAL

HIGH FEES TO TRANSACT AND MINT NFTs

- as part of any blockchain protocol, the verification and ability to carry out transactions occurs due to the incentive mechanisms in place for participants on the network (nodes) to verify, authorise and execute the transactions carried out. The minting and trading/exchange of NFTs on the Ethereum blockchain brings about quite substantial transaction fees (known on the network as "gas" fees), which in turn hinders adoption for both sellers and buyers. As alluded above, other layer 1 blockchains as well as layer 2 scaling solutions for the Ethereum network that offer lower transaction fees, are increasingly gaining adoption.

NO UNIVERSAL CONSENSUS OF TOKEN

STANDARDS - Although, at the time of writing, the Ethereum blockchain may be the most popular blockchain for NFTs, there are other alternative blockchain solutions that are gaining traction in the market. Although, at the time of writing, the Ethereum blockchain may be the most popular blockchain for NFTs, there is still no universal consensus amongst industry players of token standards of non-fungible tokens across blockchains, creating a barrier for interoperability and diminishing the potential for widespread adoption.

CYBERSECURITY AND CRYPTO WALLET

THEFT RISK - Albeit the immutable nature of NFTs, meaning that they cannot be manipulated on the blockchain, cybersecurity risk and the risk of theft of private keys to crypto wallets which hold NFTs is still a significant challenge faced in the industry. Given that NFTs are attributed to a particular wallet address, access to that address indicates ownership of that NFT, despite being illicitly acquired.

NFT DATA FRAUD - whilst NFTs can prove to mitigate fraudulent activity, it is important to remain cognisant that they are predominantly representations of digital or physical assets and not the asset in itself. Given the technological limitations to store large amounts of data on blockchains today, most NFTs do not typically contain within them the actual data files containing the underlying asset, as these are typically stored elsewhere. This resultantly exposes the NFT holder to risk pertaining to the corruption or deletion of the externally stored data file, potentially rendering the NFT worthless.

ENVIRONMENTAL COSTS - With consensus mechanisms such as "Proof-of-Work" (PoW), blockchains such as Ethereum are receiving substantial

criticism owing to the large amount of electrical resources required to sustain the network. Without the use of sustainable resources to generate the electricity supply required, this results in a significant toll on the environment, heavily questioning the sustainability of the industry. Having said this, various developments are underway to shift the energy intensive mechanism of

PoW to what is known as a “Proof-of-Stake” consensus mechanism which alleviates substantially the amount of electrical resources required.

LEGAL

REGULATORY DISCREPANCIES ACROSS

JURISDICTIONS – Given the borderless nature of crypto assets, there is a similar issue to the lack of consensus in token standards mentioned earlier, in terms of laws and regulations in the space, such as copyright laws, and even crypto regulations. This brings about significant challenges in terms of their legal status in different jurisdictions, along with the regulatory uncertainty pertaining to the legal implications of the rights to the underlying IP.

COPYRIGHT – The industry is currently faced with the issue of copyright, in so far as the purchase of NFTs representing a particular asset. As previously mentioned, it is important to reiterate the fact that an NFT is a representative token of an underlying asset, which may or may not have, attached to it, the rights to that asset. The conditions of the exchange or transaction laid out in the smart contract need to be explicit, regarding any potential transfer of ownership and specifically outline the transfer of ownership rights to the new token holder. Failure to do so will lead to the NFT having limited capabilities other than the internal utility of the token from viewing the digital asset and future re-sale potential, making any form of action which is infringeable under copyright law not permissible.

FINANCIAL MARKET IMPLICATIONS – Another repercussion of having discrepancies in regulations across jurisdictions pertains also to whether NFTs may be classified as securities, thus raising security law issues.

COUNTERFEITING – Whilst the technology can prevent the claim of ownership of counterfeit digital assets, NFTs cannot stop the infinite reproduction of a particular digital asset and cannot completely eradicate the risk of fraud.

AML IMPLICATIONS – NFT marketplaces may be subject to having to adhere to anti-money laundering regulations which may differ across various parts of the world.

TAX CHALLENGES – The lack of tax guidelines for crypto-assets may lead to issues for current and prospective industry players in the space, amidst exposure to potential legal and regulatory risks pertaining to tax obligations and tax declaration requirements.

With numerous challenges still evident within the space, will this impinge on the future viability and widespread adoption of NFTs? The next section provides several indicative trajectories NFTs can take in the coming years.





The Future through NFTs

The Future through NFTs

Amidst a definitely growing interest globally, many industries are beginning to understand and appreciate better the benefits that NFTs provide. This, in turn, paints a positive and favourable picture for NFTs and the role they will play in changing today's economies and building the societies of tomorrow.

Below, we have highlighted a host of ways NFTs can bring about this change.

1. NFTS AS SOCIAL CURRENCY

NFTs are assets which are attributed to a particular digital wallet. When on a public blockchain like Ethereum, the transactions and content pertaining to a specific wallet address are publicly available. The possibility for public viewership could in turn serve as a form of social currency whereby individuals could utilise the NFTs in their wallet as a form of social status which could exert influence on others, or to showcase proof of certain accomplishments or achievements which bring about a sense of value amongst society. The latter may take the form of having tickets to a sold-out concert of a particularly famous musician or an NFT representing the achievement of a Guinness world record for example.

2. NFTS AS A SOURCE OF UTILITY

NFTs today largely revolve around exploiting the novelty of such technology without necessarily attaching to it any real-world utility. For instance, holding an NFT which represents digital art may bring limited utility to an individual beyond the appreciation of viewing the art or re-selling it at a premium. Such a model may not be sustainable long-term, with the adoption of NFTs requiring more in terms of the provision of tangible utility to NFT holders. For example, as alluded to in previous sections, NFTs can be utilised to engage with fans or a community by having by granting exclusive access to a limited-edition item or closed event.

3. INCREASED MONETISATION CAPABILITIES

Through NFTs, the rules and conditions set in smart contracts may vastly increase the monetisation capabilities of many industries and sectors. This may be through the ease of raising capital directly from communities or fan-bases for instance or through the creation of new revenue streams, by taking a percentage cut of the transaction value of any exchange of NFTs on secondary markets, as a royalty in perpetuity.

4. USING NFTS AS COLLATERAL WITH DeFi

Whilst this use-case was already mentioned in previous sections, with the integration of greater capabilities for more transparent price discovery of NFTs through price oracles, NFTs can become more commonly used as a means of collateral for loan or credit provisions in DeFi protocols.

5. INCREASING ADOPTION OF PAPERLESS TECHNOLOGY

NFTs can facilitate the digital transformation of paper-dependent industries and processes without sacrificing authenticity and being easily verifiable in real-time.



A conceptual image featuring a lightbulb placed on a laptop keyboard. The background is a warm, golden-brown color with a soft, out-of-focus light source, creating a bokeh effect. The lightbulb is in sharp focus, showing its internal filament. The laptop keyboard is visible in the foreground, with keys slightly blurred.

Insights from Industry Experts

Insights from Industry Experts



Dr Joshua Ellul

Director, Centre for Distributed Ledger Technologies

WHAT DO YOU BELIEVE MAKES NFTS VALUABLE?

There are different aspects that may make an NFT valuable, however I see three broad categories giving it value:

- a)** Utility associated with the NFT – e.g. you can use it to get access to exclusive events
- b)** The digital or physical object that is linked to the NFT
- c)** Market perception value – the value the market gives to the NFT (independent of any utility). This is often driven based upon celebrities pushing NFTs and the community surrounding a project.

However, I believe that the “real” value of NFTs will be seen in future once NFTs are used in centralised platforms and eventually decentralised platforms. E.g. now Twitter allows for individuals of NFT art to set them as your profile picture. Indeed, you need to trust that Twitter is doing its job to only allow owners of NFTs to display them. Having said this, it is ironic that centralised platforms can now bring value to decentralised assets. Moreover, the value of NFTs will further be increased once (decent) decentralised platforms do the same.

WHAT USE-CASES FOR NFTS DO YOU THINK WILL GROW IN 2022?

- a)** NFTs in games and social media platforms (I guess ‘the metaverse’ without calling it the metaverse). I still feel there is still a lot of non-techies to be onboarded into the NFT space (artists, content creators, etc).
- b)** NFTs providing some form of utility, community engagement/belonging – However, I feel an NFT price crash is due at some point.
- c)** Royalty tokens have a lot of potential, but we need centralised platforms to make use of them (e.g. Spotify or some contender).



Dr Joshua Ellul

Director, Centre for Distributed Ledger Technologies

WHAT DO YOU THINK ARE THE MAJOR HURDLES NFTS MUST OVERCOME TO INCREASE ADOPTION?

- 1) Blockchain User-interface tooling (though it is getting there, and I expect to see browsers with built-in support this year or next)
- 2) Ability to authenticate the veracity of NFTs/claims:
 - i. How do I know I am buying the real NFT;
 - ii. What do I actually own when I buy it?
 - iii. How can I be sure that the utility associated with the NFT will be given to me?;
 - iv. How can I be sure that my unique NFT is really unique?

HOW DO YOU SEE THE FUTURE OF NFTS UNFOLD?

I see a bunch of NFTs and NFT projects crashing – the ones that do not have some utility, and also ones that cannot keep their perceived value. At the same time, I see centralised platforms adopting NFTs which can give them immediate support (centralised platforms are doing this so as to not be challenged by decentralised alternatives). I believe we'll be using NFTs in 10 years' time without knowing it, likely with CBDCs playing an on-boarding and bridging layer between the de/centralised worlds.

Will my bored ape be worth loads of money? It depends on hype – will bored apes still be 'cool' or will celebrities sell them off cheap?

Will my access to an exclusive community of art exhibitions be worth something? Likely it will.

Will my unique sword in a video game be worth something? As long as the game is still worth something. Can my unique sword be transferred across games? Even more so then.

In short, I believe the long-term will see NFTs with utility making it, those without will be subject to how 'cool' a project/item can maintain its reputation.



Dr Sandro Debono

*Consultant, Culture, Office of the Prime Minister of the Republic (Malta),
Associate Lecturer at University of Malta*

WHAT DO YOU BELIEVE MAKES NFTS VALUABLE?

In simple terms, NFTs are digital assets validated via blockchain technology. What makes them different from any other digital assets is validation and traceability which also makes the sale and resale of NFTs possible. Indeed, the possibility to monetise NFTs has made them very popular with creatives, particularly digital artists. Also, NFTs can guarantee royalty like no other transaction happening in the artworld.

WHAT USE-CASES FOR NFTS DO YOU THINK WILL GROW IN 2022?

Any type of digital asset can be assigned value via non fungible token (NFT) which is why. Art and collectible NFTs will continue to grow with lots more experimentation but 2022 should also see growth across a multiplicity of sectors. The music industry is one category that holds potential growth not just in terms of creative products but also in terms of experience such as concerts, including funding and ticketing systems.

The more stakeholders understand the potential use and benefits of NFTs, and that includes much more beyond art, the more NFTs will become mainstream.



Dr Sandro Debono

Consultant, Culture, Office of the Prime Minister of the Republic (Malta), Associate Lecturer at University of Malta

WHAT DO YOU THINK ARE THE MAJOR HURDLES NFTS MUST OVERCOME TO INCREASE ADOPTION?

Ownership creates value which is exponential if that value is recognised and acknowledged by an ever-increasing community of users. This might well be the biggest hurdle for NFTs. So far there is lots of excitement around NFTs but most of that is within expert circles or industry operators. This could be addressed by a category of service providers straddling NFT markets between physical and digital. There are clear signs that this category is coming together albeit still early days to tell.

HOW DO YOU SEE THE FUTURE OF NFTS UNFOLD?

The first thing to note about NFTs is that they form part of a wider digital and virtual ecology. They cannot be understood as standalone, concepts which means that the ways and means their future might unfold would still broadly relate to how the bigger picture does so.

The bigger picture now concerns much more the Metaverse, the simulated digital environment that is an amalgam of augmented reality (AR), virtual reality (VR) and blockchain. The industry is talking much more about Web 5.0 which combines the internet of things with artificial intelligence. I for one, am very excited to see how museums shall continue to react to and engage with this but not just. What is certain is that change shall continue to happen at a very fast pace and that change concerns the way we live, engage with peers and people around us, work and play.



Prof Stelios Bekiros (PhD, MEng, MSc, Dipl.-Ing, BEng)

"Chair Full Professor of FinAI, Econometrics & Data Science, FEMA, University of Malta ; Research Full Professor IPAG Business School (Paris, France) ; Senior Fellow & Visiting Professor London School of Economics (LSE, London, UK), LSE Health Centre & Dept. of Health Policy"

WHAT DO YOU BELIEVE MAKES NFTS VALUABLE?

The reason is because they are scarce. Whatever NFT application is pursued, it will be guaranteed as one of a kind. The scarcity principle – as a basic fundamental economics theory sets forth – the less available something is, the more likely interested parties want its possession and the higher the price users pay for it.

NFTs are interesting because their uniqueness and ownership can be verified, they can be utilised across applications developed by different companies, and they can be traded easily through secondary markets. These features open new possibilities for use cases and business models.

WHAT USE-CASES FOR NFTS DO YOU THINK WILL GROW IN 2022?

a) LPs & AMMs

A new trend in active management of liquidity pools (e.g., Uniswap 3) which is assumed to provide higher capital efficiency for LPs, boils down to hodlers of LPs receiving Non-Fungible Tokens (NFTs) instead of fungible ERC-20 tokens representing their LP positions. However, some have criticised this policy as involving a high risk of "Concentrated Liquidity", which might jeopardize decentralisation, might go against the ethos of DeFi per se, and importantly does not entail swift liquidation in periods of crises whereby LPs pursue relocating their positions directly and immediately.

b) Insurance protocols

The Armor protocol consists of a token i.e., arNFT which introduces a tokenised form of insurance coverage on Nexus Mutual. ArNFTs allow users to buy insurance cover without having to do KYC. Those insurance covers are tokenised, hence users can now transfer them to other users or sell them on secondary markets. This structure also promotes further DeFi composability and can be minted for all Insurance protocols.



Prof Stelios Bekiros (PhD, MEng, MSc, Dipl.-Ing, BEng)

"Chair Full Professor of FinAI, Econometrics & Data Science, FEMA, University of Malta ; Research Full Professor IPAG Business School (Paris, France) ; Senior Fellow & Visiting Professor London School of Economics (LSE, London, UK), LSE Health Centre & Dept. of Health Policy"

WHAT USE-CASES FOR NFTS DO YOU THINK WILL GROW IN 2022?

c) Portfolio management

Another use case is the Indexed Finance protocol which links to portfolio management. Users can mint, swap or burn the indices token and the underlying assets, and the integrated AMM mechanism (forked from Balancer) rebalances many indices automatically. There are seven indices available under Indexed Finance, one of which is the NFT Platform Index (NFTP), which is quite innovative and the first paradigm of NFT usage under this framework.

d) Real estate

One of the first home sales using NFTs was realized in Florida in an online auction. The first step involved transferring ownership of the house from the seller to a limited liability company (LLC). After the auction winner was determined, ownership of the LLC was automatically transferred to the winner and the seller received the crypto payment in their digital wallet. The company, Propy, came up with the LLC manoeuvre so the ownership transfer could be instantaneous. The usual due diligence processes that come with buying a home, like completing an inspection, obtaining a title report, and conducting a title search, were done by Propy before the auction. Propy's goal, through its NFT auction, is ultimately to appeal to the crypto-savvy or young homebuyers who are fed up with the cumbersome process of purchasing a house.

WHAT DO YOU THINK ARE THE MAJOR HURDLES NFTS MUST OVERCOME TO INCREASE ADOPTION?

a) Crypto volatility

NFTs are issued on the blockchain and their value is set using cryptocurrencies. At the moment, the main blockchain used for issuing NFTs is Ethereum, which means the value of these NFTs will depend on the value of ETH. While ETH has been showing strength, as with most cryptocurrencies, it's not uncommon that its value sees a 10% fluctuation in a day.

b) High cost and "hidden" fees

Many users are not aware of the costs. As an NFT creator, minting and selling an NFT on the most famous platforms (using blockchains such as Ethereum) can be very costly. As a buyer, someone has to pay fees as well, such as buying fees and in some cases, conversion fees. In fact, every interaction with the blockchain involves a gas fee. Each interaction needs a different amount of gas, depending on the complexity of the computational work required, and how fast that interaction happens. Moreover, gas prices are not set in stone and they fluctuate depending on factors such as Ethereum's network congestion. These fees are a barrier for many digital creators to enter the NFT space, but also for many buyers as NFT prices usually reflect the high minting fees.



Prof Stelios Bekiros (PhD, MEng, MSc, Dipl.-Ing, BEng)

"Chair Full Professor of FinAI, Econometrics & Data Science, FEMA, University of Malta ; Research Full Professor IPAG Business School (Paris, France) ; Senior Fellow & Visiting Professor London School of Economics (LSE, London, UK), LSE Health Centre & Dept. of Health Policy"

WHAT DO YOU THINK ARE THE MAJOR HURDLES NFTS MUST OVERCOME TO INCREASE ADOPTION?

c) Hype, fad bubble: behavioural economics perspectives

This is a question most interested parties/users are asking themselves when considering investing in the NFT world. And many decide not to take the plunge. NFTs' purpose isn't to create a fad thanks to six figure sales of memes or pixelated images etc. New NFT use cases and projects keep launching, and a drop in sales value, coupled with an increasing number of users simply means the market is stabilising, with more users interacting on smaller projects. Hence, the future of NFTs is ensured.

d) Environmental concerns

Blockchain technology can be generally energy intensive. A well known example is that a single NFT transaction could power an average American household for one and a half days. However, those concerns are already dealt with, as blockchain technology improvements are already employed (lightning network, green mining etc).

WHAT DO YOU THINK ARE THE MAJOR HURDLES NFTS MUST OVERCOME TO INCREASE ADOPTION?

e) Risk of theft

An NFT is unhackable, but it doesn't mean it can't be stolen. NFTs are "stored" in a wallet, and if hacker tampered with an account to transfer NFTs to their own wallet, they become the owner, and the initial owner ends up with nothing. However, there are ways to secure NFTs and make it close to impossible for a hacker to get inside any wallet.

f) Ownership

An NFT ownership on the Ethereum blockchain, is a purchase through a decentralised ledger that provides transparent and unique ownership of that NFT, whilst also allowing verification. But in most cases, transactions still happen on centralised websites and marketplaces, thus NFT files are generally too big to be stored on the blockchain, meaning that they are stored in centralized data servers. In case the owner of a centralised marketplace or data server "disappears", so does an NFT. However, decentralisation provides a secure manner of storage on the blockchain.



Prof Stelios Bekiros (PhD, MEng, MSc, Dipl.-Ing, BEng)

"Chair Full Professor of FinAI, Econometrics & Data Science, FEMA, University of Malta ; Research Full Professor IPAG Business School (Paris, France) ; Senior Fellow & Visiting Professor London School of Economics (LSE, London, UK), LSE Health Centre & Dept. of Health Policy"

WHAT DO YOU THINK ARE
THE MAJOR HURDLES
NFTS MUST OVERCOME
TO INCREASE ADOPTION?

g) No Copyright Protection

There's an argument that NFTs are good for digital artists because it enables creatives to get paid for their work. However, since art items can be easily duplicated and spread online, often no credit is given to the original creator. Also, there is a lack of legal framework and precedence to validate and reinforce the true copyright and ownership of NFTs.

Unfortunately, there's currently nothing stopping people from tokenising someone else's art, claiming it, and profiting off it. This poses a huge threat to both buyers and sellers, as a buyer of an NFT art could be unknowingly sued for copyright infringements.

WHAT DO YOU THINK ARE
THE MAJOR HURDLES
NFTS MUST OVERCOME
TO INCREASE ADOPTION?

h) Seller Tax

This is another prominent challenge of NFT, which could affect its growth in the future. Buyers and sellers in the NFT landscape might discover the steep taxes as an undermining factor for joining the NFT revolution. The US government considers the sales of NFTs as just the same as the sale of stocks. Sale of NFTs is considered as a representation of investment profits, thereby implying their dependence on capital gains tax.

NFTs are basically collectibles and therefore incur the burden of higher tax rates up to 28%. It is imperative to establish strict and precise taxation laws with the increasing presence of NFTs. This can improve the integrity of the market while encouraging the confidence of NFT traders.



Prof Stelios Bekiros (PhD, MEng, MSc, Dipl.-Ing, BEng)

"Chair Full Professor of FinAI, Econometrics & Data Science, FEMA, University of Malta ; Research Full Professor IPAG Business School (Paris, France) ; Senior Fellow & Visiting Professor London School of Economics (LSE, London, UK), LSE Health Centre & Dept. of Health Policy"

HOW DO YOU SEE THE FUTURE OF NFTS UNFOLD?

a) NFTs and the Metaverse

NFTs will play a number of important roles in the virtual worlds that will make up the metaverse. They also enable digital items to be unique. People in the real world like collecting and showing off rare and unique things, and there's no reason to think the virtual world will be any different. It's already possible to buy unique artwork to display in a virtual reality art gallery. In the future, it's likely that virtual products could be used by our avatars as we go about in our digital lives.

HOW DO YOU SEE THE FUTURE OF NFTS UNFOLD?

b) NFTs and the IoT

By 2030 there could be more than 125 billion connected devices in the world. This huge network of computers, vehicles, appliances, wearables, industrial machinery, and many other items is what we mean when we talk about the internet of things (IoT). NFTs have an important role to play. Much of the communication that takes place on the IoT is made up of machine-to-machine (M2M) communications.

NFTs are potentially useful here because they allow machines to authenticate the data that is coming in from other machines. One such initiative is looking at connecting NFTs with city infrastructure assets such as street lamps, bus shelters, and traffic lights. Here, the tokens would enable accurate data from these devices to be made available for commercialization by firms looking to develop new services, such as communications companies.



Prof Stelios Bekiros (PhD, MEng, MSc, Dipl.-Ing, BEng)

"Chair Full Professor of FinAI, Econometrics & Data Science, FEMA, University of Malta ; Research Full Professor IPAG Business School (Paris, France) ; Senior Fellow & Visiting Professor London School of Economics (LSE, London, UK), LSE Health Centre & Dept. of Health Policy"

HOW DO YOU SEE THE FUTURE OF NFTS UNFOLD?

c) NFTs in Healthcare

The NFT technology in the healthcare space will potentially empower individuals to take control of their own health data. It could even let them make money from it. Personal healthcare data is bought and sold all the time, generating vast amounts of value. However, very little of that goes to the person who really owns the data – the patients themselves. Nowadays, it's easier than ever to generate and collect health data, thanks to the availability of wearables, monitors, and sensors. Even genomic information is accessible, thanks to services that let individuals map and analyze their own DNA information. However, users in general do not know where the information generated every time by a device or interact with a service is ending up. In fact, it turns out that much of this information will probably eventually make its way to the black market. Yes, even criminals are making more money from health data. NFTs allow information to be tagged with data, which means it can be tracked whenever it is passed on. Not only does this mean better oversight of where personal information ends up, it means one day citizens could potentially take advantage of the

HOW DO YOU SEE THE FUTURE OF NFTS UNFOLD?

smart contract capabilities of NFT and blockchain technology to ensure they are paid the royalties due every time a person's data is passed on. Ultimately, NFTs could potentially bring transparency and accountability to the transfer of this highly sensitive information.

d) Big Tech and Commercial brands utilise NFTs

Companies such as Budweiser, Adidas, and Pepsi, have already issued NFTs. However, the real trend is going to be set by big tech. TikTok did an NFT drop in 2021, but it wasn't a product that millions of users could use.

Clearly, Facebook is on board since they renamed the whole company to Meta, while recently YouTube announced that they are exploring ideas for NFTs. The most significant move so far has been by Twitter which recently allowed users to verify they own the NFT that they set as their profile picture. As big tech gets on board with NFTs, we'll see acceptance for the medium grow exponentially and help fuel the use-ability of NFTs.



Prof Stelios Bekiros (PhD, MEng, MSc, Dipl.-Ing, BEng)

"Chair Full Professor of FinAI, Econometrics & Data Science, FEMA, University of Malta ; Research Full Professor IPAG Business School (Paris, France) ; Senior Fellow & Visiting Professor London School of Economics (LSE, London, UK), LSE Health Centre & Dept. of Health Policy"

HOW DO YOU SEE THE FUTURE OF NFTS UNFOLD?

e) Digital art industry

NFTs enable artists to sell their art directly to their fans, in the peer-to-peer fashion envisioned by Bitcoin's whitepaper. These tokens also introduce new monetisation options, like offering fractionalised NFTs, or selling an NFT of a work in progress, which gives fans a stake in the future success of the artwork. Applying smart contracts to NFTs can also create additional revenue sources, enabling artists to reap the profit from royalty payments and secondary sales of their artwork. NFTs can also be used to tokenise both tangible and intangible assets in physical artwork and accompanying NFT items.

f) NFTs and Gaming

NFTs have injected a newfound momentum in gaming, making blockchain-based, crypto-powered play-to-earn games a tangible reality. Applied to in-game assets, NFTs open a new chapter in gaming history, marking the first time that players are truly the owners of their assets, that they can sell for a profit on NFT marketplaces. Going beyond gaming assets, digital games industry could tokenise its characters, meaning

HOW DO YOU SEE THE FUTURE OF NFTS UNFOLD?

that users who want to start playing must first buy NFTs. Given that there is a limited number of NFTs, a constantly growing player base awards these NFTs with an element of scarcity, presenting the possibility of their price appreciation in the long run.

g) NFT fundraising and charities

Based on the benefits behind tokenisation, charity organisations are also starting to explore the potential of NFTs, as they can help set up charity initiatives in a decentralised, online manner with less overhead compared to classical auctions. Applying smart contracts to NFTs creates even more charitable venues, as these algorithms can program NFTs to automatically transfer funds to a good cause with every transaction. Furthermore, applying NFTs to charitable initiatives could introduce new revenue streams to organizations. Yet, NFT-infused charity initiatives are still in their infancy. Seeing how NFTs are solving some of the fundamental issues of the current system, similar initiatives will likely become more popular in the future.



Prof Stelios Bekiros (PhD, MEng, MSc, Dipl.-Ing, BEng)

"Chair Full Professor of FinAI, Econometrics & Data Science, FEMA, University of Malta ; Research Full Professor IPAG Business School (Paris, France) ; Senior Fellow & Visiting Professor London School of Economics (LSE, London, UK), LSE Health Centre & Dept. of Health Policy"

HOW DO YOU SEE THE FUTURE OF NFTS UNFOLD?

h) NFTs enable new subscription models

NFTs bring peak programmability to the table, which is one of their most attractive attributes, allowing them to offer a wide range of utility to their users. Hence, they can create new subscription models and online social perks. NFTs can be used as alternative digital subscription models. As an alternative to digital subscription, unlocking all content for NFT holders will be giving them access to exclusive digital experiences and events.

The music NFT marketplace, is aiming to disintermediate the music industry. NFTs will enable musicians to mint their songs as NFTs and sell them directly to their fans, thus removing profit-seeking middlemen and facilitate trustless, peer-to-peer transactions. Decentralised music streaming platforms aim to democratize the music industry, by offering artists 90% of the sales revenue, with the other 10% going to decentralized node operators securing the network. Other NFT collections (e.g., Bored Ape Yacht Club) offer social perks to their holders in the metaverse, i.e., provide club membership. For metaverse-based social clubs, NFTs function similarly to a digital identity, offering holders access to exclusive

HOW DO YOU SEE THE FUTURE OF NFTS UNFOLD?

perks, content, and events. Employing NFTs as the identity layer of metaverse projects will likely become more popular, due to the uniqueness and censorship resistance of each token.

i) Real estate asset tokenisation

Beyond creating non-fungible assets in the metaverse, NFTs can be leveraged to tokenise both tangible and intangible assets. Each NFT can function as a traceable, censorship-resistant ownership certificate for any given asset, revealing the most important information about it publicly via the blockchain ledger.

As such, NFTs can be used to tokenise real-world assets, such as real estate. Real estate investment ecosystems will offer fractionalised NFTs of timeshare resorts. Similar initiatives could become more accessible to the public resulting in a more democratised real estate investment space.

Conclusion

Few assets are currently coveted more than NFTs right now, with this phenomenon attracting widespread attention globally from several strata of society, such as investors, fans, institutions, corporate entities and even governments.

This report aimed to facilitate the narrative around NFTs by providing a descriptive overview of NFTs, highlighting their characteristics, applications and future outlook, with the intention to better understand the current ongoings in the industry and the capabilities such a technology has for economies of tomorrow.

So far, NFTs have largely been synonymous with digital art and collectibles, with other use-cases still relatively outside the limelight. However, as the ecosystem develops, aspects such as utility within NFTs will take centre-stage and prove to be an integral component, linked with real-world applications across many industries.

All in all, as the digital economies continue to thrive, there is little doubt that NFTs are poised to become mainstream, playing a pivotal role in bringing the digital and physical worlds closer to one another and disrupting both new and established industries.

About Seed

We set up Seed wanting to do things differently.

Seed is a research-driven advisory firm sought for its holistic approach to strategic, business and policy advisory.

Backed by deep technical expertise and supported by technology, our firm attracts the best people, whilst creating meaningful work.

Our principles and vision define us. We care about making a difference, for our employees, for our clients and the wider community. Our clients enjoy objective advice, clearly expressed. With our help, they make better decisions and get better results.

No matter what sector, size of business or scope of work, we bring together rigour, knowledge, and experience.

Seed is big enough to deliver yet small enough to care.

DELIVERING IMPACT



OUR STRENGTHS

- ✓ Pragmatic approach and proven research tools
- ✓ Analytical expertise to extract insights from data
- ✓ Experienced local team
- ✓ Network of global experts



OUR DIFFERENTIATORS

- ✓ Tailored approach
- ✓ Unbiased objective outside-in views
- ✓ We work with you on the ground
- ✓ Multi-disciplinary approach
- ✓ Our service offering is holistic



OUR IMPACT

- ✓ Deliver solutions that are actionable and measurable
- ✓ Results-driven methodology

OUR ASSETS



STRONG TEAM

We offer a committed senior local & international team with deep academic and practical expertise supported by a global network of thematic experts.



DEEP CASE EXPERIENCE & EXCELLENT REFERENCES

Strong track record of cases where the team supported organisations, industries and governments around the world in transformation and strategic planning.



THOUGHT LEADERSHIP

We stand for thought-leadership in highly relevant topics with a research-driven ethos which enables our clients to access a deep level of understanding, insight and analysis.

How can we help

TOKENOMIC ADVISORY

Having worked on a number of projects and with a developed framework for token engineering, we have the economic expertise to support tokenomic advisory & design.

ECOSYSTEM DEVELOPMENT

Having worked on key economic ecosystems, we bring tangible experience in building and developing cluster-based ecosystems with a focus on tax incentives, sectoral strategies, and talent attraction.

TAX

Seed can assist individuals and corporations adhere to all tax requirements pertaining to their industry or business activity from a Maltese perspective including corporate income taxes, capital gains taxes, withholding taxes, stamp duties, VAT, individual income and wealth tax

TRANSACTIONS CONSULTING

Our Transaction consulting services assist in optimizing capital and transaction management. This may include M&A advisory services, valuation exercises and tokenomic modelling of digital assets.

STRATEGY CONSULTING

Seed can assist companies and organizations improve their performance, by assisting them in strategic decision making including the identification and mitigation of business risks.

IMPACTS AND RISK

ASSESSMENTS

Supporting business leaders in identifying and assessing risks relating to their operations and future investment strategies and impacts they bring along.

REGULATORY DEVELOPMENT

Our team has drawn up and implemented numerous regulations and we can support regulatory authorities in their efforts to develop and implement regulations.

POLICY MAKING

Having direct experience, we currently support governments in drawing up policies and strategies both on a sectoral and national level.

APPLIED ECONOMICS

Our toolkit of applied economics is particularly useful in supporting governments understanding consumers, firms, and policy impacts, both intended and unintended.

OUR TEAM



JP Fabri

JP Fabri is co-Founding Partner at Seed. An economist by profession, he has extensive experience in applying economics in the private and public sector. He has advised nine international governments on building economic resilience. He is a visiting assistant lecturer at the University of Malta.



Nicky Gouder

Nicky is a founding Partner at Seed focusing on Tax, Corporate and Private Clients. Advising both corporate clients and High Net Worth Individuals & families, Nicky is a leading tax specialist in Malta. He has advised and structured a number of international structures and transactions. He continues to advise a number of clients with family planning issues and also businesses restructuring programmes.



Glenn Fenech

An economist by profession, Glenn worked at one of the Big4 firms focusing on advisory and market intelligence. He was involved in a number of significant engagements for both public and private sector clients, including a skills gap analysis, a national sectoral economic risk assessment and impact assessments. He was also very actively involved in various market intelligence initiatives in the hospitality and retail sectors.

OUR TEAM



Dr Paul Ciantar

Dr. Paul Ciantar is a Consultant at Seed. A warranted lawyer by profession, Paul has amassed experience in both the private and public sector working at applying financial services legislation in regulatory and advisory fields. His primary area of expertise is PSD2 and the provision of payment services-related advice.



Karl Wismayer

Analyst at Seed focusing on Strategic Consultancy, Economic Research & Data Analytics and Financial Regulation. Following his postgraduate master's degree in finance, Karl began his career in financial services, primarily focusing on the provision of advisory services in relation to fintech, namely blockchain and cryptocurrencies. However, Karl's keen interest in quantitative and qualitative research also led to his involvement in various projects namely the formulation of business plans and IP valuations, consulting on strategy transformation maps, advising on tokenomics and DAO formation, as well as contributing to writing public policy documents and national economic frameworks.



978-9918-9531-4-1

Seed

Strategy | Regulatory | Tax | Advisory

seedconsultancy.com